

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-21. (Cancelled).

22. (New) An opto-electronic device comprising:

a crystalline substrate;

an insulator layer coextensive with a top surface of the crystalline substrate;

an epitaxial stack of alternating photon-active semiconductor layers and electrical-insulator layers above a central part of the top surface of the insulator layer;

first contact means formed on a first edge part of the top surface of the insulator layer;

said first contact means extending parallel with a direction of epitaxial deposition and being in contact with one side wall of at least one active semiconductor layer for extracting electrons from or injecting electrons into the active semiconductor layer(s) associated therewith;

second contact means formed on a second edge part of the top surface of the insulator layer; and

said second contact means extending parallel with the direction of epitaxial deposition and being in contact with a second side wall of at least one active semiconductor layer for extracting holes from or injecting holes into the active semiconductor layer(s) associated therewith.

23. (New) An opto-electronic device as claimed in claim 22, wherein each active semiconductor layer is comprised of a silicon-compatible alloy compound.

24. (New) An opto-electronic device as claimed in claim 22, wherein said first and second

contact means each comprise a conductor part and an insulator part extending parallel with the direction of epitaxial deposition of the epitaxial stack.

25. (New) An opto-electronic device as claimed in claim 24, wherein the insulator part of each of said first and second contact means has a thickness defined depending on whether tunneling is desirable or not.

26. (New) An opto-electronic device as claimed in claim 1, wherein the active semiconductor layers include quantum wells.

27. (New) An opto-electronic device comprising:

a crystalline substrate;

an insulator layer coextensive with a top surface of the crystalline substrate;

an epitaxial stack of alternating photon-active semiconductor layers and electrical-insulator layers above a central part of the top surface of the insulator layer;

said epitaxial stack comprising at least two successive different groups of alternating photon-active semiconductor and insulator layers;

the layers in the different groups having a different length and having a different band-gap;

first contact means associated with each of said groups and formed on a first edge part of a top surface of the insulator layer underneath each associated group of layers in the epitaxial stack;

each of said first contact means extending parallel with a direction of epitaxial deposition;

each of said first contact means being in contact with one side wall of the active semiconductor layers in said associated group for extracting electrons from or injecting electrons into the active semiconductor layers in said associated group;

each of said first contact means being separated from an adjacent first contact means by an insulator spacer;

second contact means associated with each of said groups and formed on a second edge part of the top surface of the insulator layer underneath each associated group of layers;

each of said second contact means extending parallel with the direction of epitaxial deposition;

each of said second contact means being in contact with a second side wall of the active semiconductor layers in said associated group for extracting holes from or injecting holes into the active semiconductor layers in said associated group; and

each of said second contact means being separated from an adjacent second contact means by an insulator spacer.

28. (New) An opto-electronic device as claimed in claim 27, wherein each active semiconductor layer is comprised of a silicon-compatible alloy compound.

29. (New) An opto-electronic device as claimed in claim 27, wherein the active semiconductor layers in the successive groups are arranged with pre-selected monotonically increasing band-gaps.

30. (New) An opto-electronic device as claimed in claim 27, wherein said first and second contact means each comprise a conductor part and an insulator part extending parallel with the direction of epitaxial deposition of the epitaxial stack.

31. (New) An opto-electronic device as claimed in claim 30, wherein the insulator part of each of said first and second contact means has a thickness defined depending on whether tunneling is desirable or not.

32. (New) An opto-electronic device as claimed in claim 27, wherein the active semiconductor layers include quantum wells.